

WE CLAIM AS OUR INVENTION

- A2
1. (Amended) A semiconductor structure comprising:
a substrate having a device feature formed thereon;
a dielectric layer disposed over said substrate and device feature and having at least one contact hole formed therein;
a polish stop layer disposed over the dielectric layer and extending within the contact hole;
a layer of metal disposed over the polish stop layer within the contact hole and forming a plug; and
wherein said polish stop layer comprises titanium aluminum nitride.
 2. (Amended) The semiconductor structure of claim 1 and including a metal coating under said dielectric layer, said metal coating comprising a compound of titanium nitride and aluminum.
 3. (Amended) The semiconductor structure of claim 2 wherein the dielectric comprises a silicon oxide.
 4. The semiconductor structure of claim 3, wherein the metal coating comprises an anti-reflective coating.
 5. (Amended) The semiconductor structure of claim 1, wherein the polish stop layer comprises titanium aluminum nitride with between about 5 and 20 percent by weight of aluminum.
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- A3
7. The semiconductor structure of claim 2, wherein the metal coating comprises about 5 to 20 percent by weight of aluminum.
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19. A semiconductor structure comprising:
a substrate layer;
a dielectric layer disposed over the substrate layer and having a via formed therein;
a polish stop layer comprising titanium nitride alloyed with carbon deposited over the dielectric layer and extending into the via;
a metal layer deposited over the polish stop layer and filling the via; and
wherein the polish stop layer has a hardness which is 30 to 35 percent greater than a hardness of titanium nitride alone for protecting the dielectric layer from a chemical mechanical polishing process used to remove a portion of the metal layer deposited outside of the via.

20. The semiconductor structure of claim 19, wherein the polish stop layer comprises titanium nitride alloyed with between 5 and 20 percent by weight carbon.

21. A semiconductor structure comprising:
a metal layer disposed on a substrate;
a layer of titanium aluminum nitride disposed on the metal layer;
a dielectric layer disposed on the layer of titanium aluminum nitride;
a patterned layer of photoresist disposed on the dielectric layer exposing a selected portion of the dielectric layer to an etching process;
wherein the layer of titanium aluminum nitride functions as an etch stop layer upon removal of the selected portion of the dielectric layer to prevent the etching process from compromising the underlying metal layer.